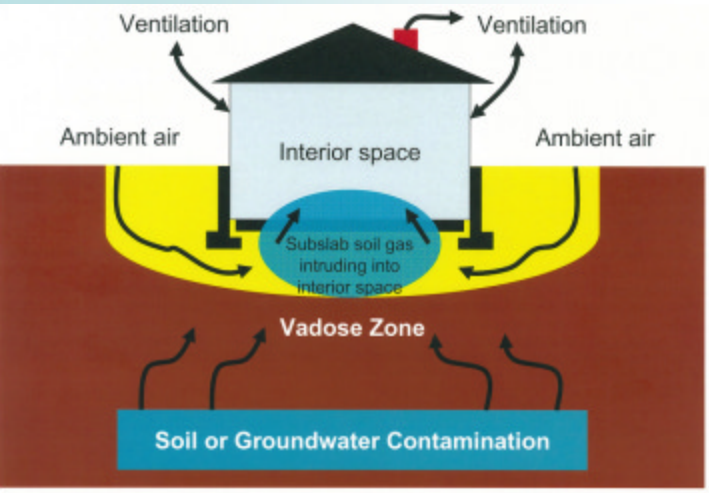
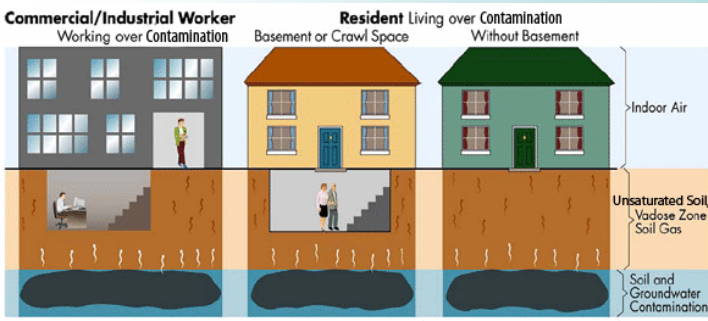
EPA REGION 6 SOIL VAPOR INTRUSION STUDY



Vapor Pathway into Buildings

Purpose

- Study conducted to determine if groundwater contaminants impacted the soil gas and if so did a completed indoor air pathway exist
- Focused on residential or commercial structures impacted by contaminated shallow groundwater (primarily by chlorinated solvents)
- Sites selected based on input from States, community groups and RCRA program knowledge

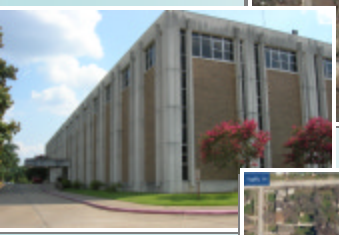


Technical Approach

- Study designed to use Trace Atmospheric Gas Analyzer (TAGA) mobile laboratory to assist with selection of indoor air sampling locations at 3 of the 4 sites
- TAGA mobile laboratory obtained sub-slab soil gas data using *Tedlar* bags to collect samples and analyze them
- Also able to utilize TAGA during screenings in structure crawl spaces
- Allowed for quick indoor air sampling decisions based on a combination of:
  - concentrations,
  - chemicals of concern present,
  - type of structure and
  - whether or not we could obtain future access to the structure
- TAGA also used to rule out potential lifestyle interferences prior to collecting an indoor air sample


U.S. EPA Trace Atmospheric Gas Analyzer (TAGA)

One of two neighborhoods sampled around the former Kelly AFB


Clinic at the former England AFB


Neighborhood near Delfasco Forge


Parker Solvents facility

Study Locations and Results

- **Kelly AFB Area** San Antonio, Texas
  - 20 homes in 2 areas located outside of the former base sampled
  - 5 residences selected for further evaluation; PCE sub-slab values ranged from 170 to 570 µg/m^3 and indoor values ranged from 0.11 to 0.78 µg/m^3
  - Homes to be resampled during the winter months to verify there were no seasonal variations (currently scheduled for February 2009) pathway
- **England AFB** Alexandria, Louisiana
  - Samples collected from sub-slab, crawl space and indoor locations at the former base hospital
  - 2 low level detections of TCE and PCE in the sub-slab samples
  - Subsequent indoor air sampling did not indicate a complete pathway
- **Delfasco Forge Area** Grand Prairie, Texas
  - Sub-slab and crawl space samples taken at 16 homes and 2 commercial buildings
  - 5 residences selected for further evaluation:
    - TCE crawl space values ranged from 9.4 to 180 µg/m^3 and indoor values ranged from 0.59 to 64 µg/m^3
    - Indoor air PCE detections ranged from 0.05 to 0.95 µg/m^3
  - Ventilation systems installed in 2 residences
  - Additional sampling will be conducted this Winter to further define the extent of impacted homes
- **Parker Solvents Site** Little Rock, Arkansas
  - Samples collected from 4 homes, 4 highway department buildings and Parker Solvents office/warehouses
  - Results indicated some contaminants were above screening levels, but did not appear to be caused by the shallow groundwater plume
  - Majority of detections above screening levels in indoor air samples were Benzene and PCE (Benzene detections in areas with elevated ambient air and in office space adjacent to an open truck bay and/or warehouse space)

Community Involvement

- Always meet with the site's owner to discuss the proposed investigation of areas which are potentially impacted by contamination
- For the Delfasco and Kelly AFB sites, held public meetings prior to the sampling event; as well as additional meetings when results were available
  - Met with interested:
    - ✓ local community groups
    - ✓ residents and
    - ✓ city health departments

Future Plans

- Additional sampling will be conducted to further define the area of concern at the former Delfasco Forge site
- Resample several homes and expand the study to include an additional neighborhood in the area around the former Kelly AFB
- Based on input from the State of Arkansas, we will be assisting ADEQ with a new site study in early 2009
- Will continue to coordinate issues through our Regional Vapor Intrusion Work Group